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GUIDELINES FOR CONTENT OF PRE-SERVICE PROFESSIONAL EDUCATION FOR SECONDARY SCHOOL SCIENCE TEACHERS.

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DESCRIPTORS- *PROFESSIONAL EDUCATION, *PRESERVICE EDUCATION, *SCIENCE EDUCATION, *SECONDARY SCHOOL SCIENCE, *TEACHER EDUCATION, GUIDELINES, TEACHER ROLE,

THESE GUIDELINES ACCOMPLISH FOUR BASIC TASKS--(1) THEY DEVELOP A RATIONALE FOR THE PROFESSIONAL EDUCATION SEQUENCE OF EXPERIENCES PROVIDED FOR THE PRE-SERVICE EDUCATION OF SCIENCE TEACHERS, (2) THEY PRESENT A SCHEME TO SHOW SELECTED ESSENTIAL DIMENSIONS IN THE PREPARATION OF SCIENCE TEACHERS INDIVIDUALLY AND AS A GROUP TO THE PREPARATION OF TEACHERS IN GENERAL, (3) THEY SHOW THE CONTINUING NATURE OF SELECTED PROFESSIONAL CONCERNS THROUGHOUT THE PERIOD OF PRE-SERVICE PREPARATION AND THE POSSIBLE CHANGING EMPHASES WHICH THE SEVERAL CONCERNS RECEIVE AS THE STUDENT PROGRESSES THROUGH THE PROGRAM OF PREPARATION, AND (4) THEY SUBMIT SELECTED STATEMENTS, INCLUDING A BRIEF RATIONALE, AND LIST SPECIFIC ITEMS WHICH ARE INDICATIVE OF THE COMPETENCIES AND KNOWLEDGE NEEDED BY THE PROFESSIONAL TEACHER. THE STATEMENTS REFERRED TO IN TASK 4 RELATE TO (1) THE SCHOOL AS AN INSTITUTION-HISTORY AND PHILOSOPHY, (2) HUMAN DEVELOPMENT, (3) LEARNING, (4) MEASUREMENT AND EVALUATION, (5) TEACHING TACTICS, (6) CURRICULUM DEVELOPMENT, (7) PURPOSES AND METHODS OF SCIENCE EDUCATION, AND (8) COMMITMENT TO THE PROFESSION. (DS)

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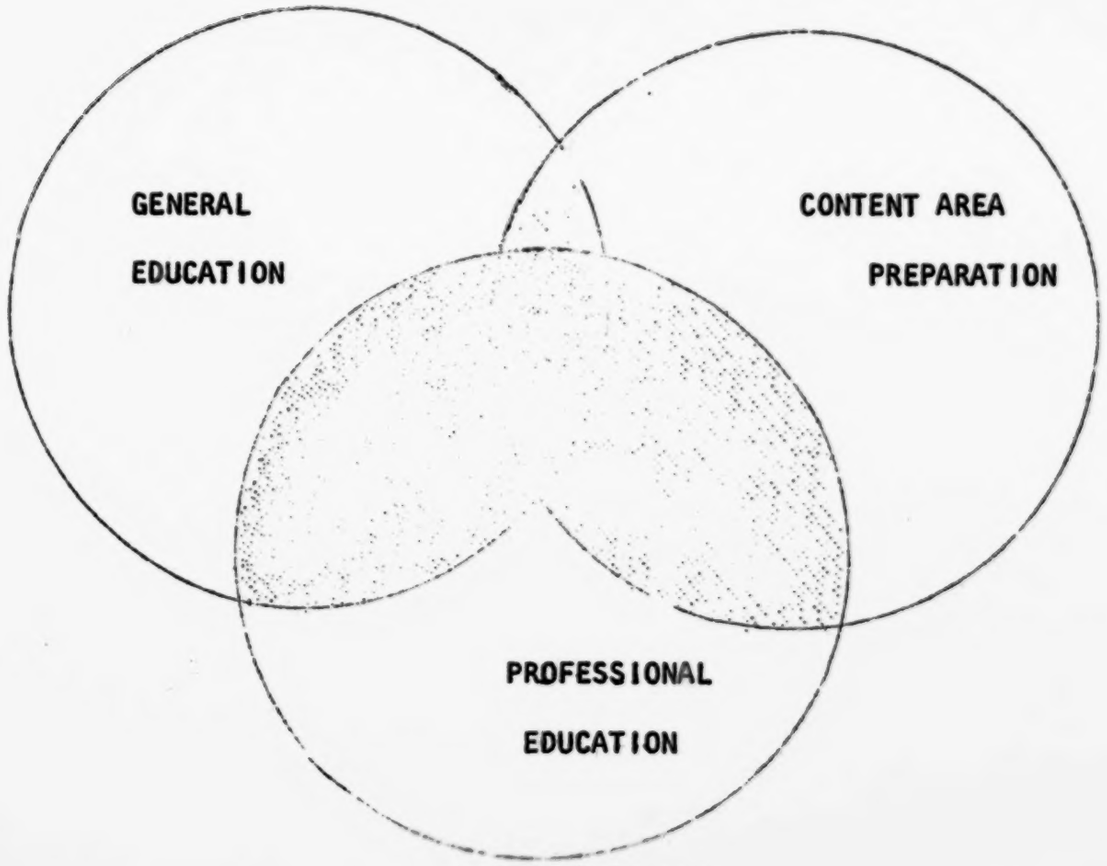

Final Report
December, 1967

Prepared by the Joint Teacher Education Subcommittee of the

°Cooperative Committee on the Teaching of Science and Mathematics of the American Association for the Advancement of Science

°Association for the Education of Teachers of Science National Science Teachers Association

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GUIDELINES FOR CONTENT OF PRE-SERVICE PROFESSIONAL EDUCATION FOR SECONDARY SCHOOL SCIENCE TEACHERS*

Abstract

These Guidelines:

A. Develop a rationale for the professional education sequence of experiences provided for the pre-service education of science teachers. (The concern for general education and preparation for teaching fields has been extensively considered in other reports).

B. Present a scheme to show selected essential dimensions in the preparation of science teachers and the relationship of the professional preparation of science teachers individually and as a group to the preparation of teachers in general. (Presentation I).

C. Show the continuing nature of selected professional concerns throughout the period of pre-service preparation and the possible changing emphases which the several concerns receive as the student progresses through the program of preparation. (Presentation II).

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*Prepared by a joint subcommittee from the Cooperative Committee on the Teaching of Science and Mathematics of the American Association for the Advancement of Science and the Association for the Education of Teachers of Science. Members of the subcommittee are Professor Ralph W. Lefler, Purdue University, Dr. Herbert A. Smith, Colorado State University, and Dr. Wayne Taylor, Michigan State University, Chairman.

D. Submit selected statements, including a brief rationale, and list specific items which are indicative of the competencies and knowledge needed by the professional teacher. The statements relate to the following areas:

1. The School as an Institution--History and Philosophy
2. Human Development
3. Learning
4. Measurement and Evaluation
5. Teaching Tactics
6. Curriculum Development
7. Purposes and Methods of Science Education
8. Commitment to the Profession

Foreword

The Cooperative Committee on the Teaching of Science and Mathematics of the American Association for the Advancement of Science, which observed its twenty-fifth anniversary in 1966, has from the beginning concerned itself with teacher education. More recently the Association for the Education of Teachers of Science (AETS), which was added to the membership of the Cooperative Committee in the early sixties, has had an active committee concerned with undergraduate teacher preparation. The joint committee responsible for this report was formally activated in 1964, although predecessor committees had set the stage for its activities. As early as 1946 formal recommendations were proposed by the AAAS Cooperative Committee for the preparation of science teachers[1]. As science and science education have become more diverse and extensive attention has been paid to the development of revised science curricula in the late fifties and early sixties, the problem of adequate preparation of secondary school teachers charged with the responsibility for science and mathematics instruction has also increased. In the wake of such curriculum developments, indeed even anticipating such changes, the Cooperative Committee, through its subcommittee on Teacher Certification, presented a preliminary set of recommendations for pre-service teaching field content in School Science and Mathematics in April, 1959.

The report had been in preparation for several years, and had been widely discussed in such meetings as the Bowling Green Conference on Teacher Education and Professional Standards in June of 1958. As a result of feedback from these meetings, comments elicited by the article, and comments received from individuals and professional societies, the report was revised and presented in final form in the April 8, 1960 issue of Science. The

committee did not, at that time, feel ready to make recommendations regarding the professional education segment of the science teacher preparation program, and the present report is a proposal of a subsequent subcommittee under the joint aegis of the AAAS Cooperative Committee and the Association for the Education of Teachers of Science.[2]

Paralleling developments in the Cooperative Committee, the Association for the Education of Teachers of Science has devoted itself to the problem of professional preparation also; indeed the Eastern Regional Meeting in 1964 was devoted to the topic "Model Programs for the Education of Teachers of Science," and a panel reported at the 1965 National Meeting in Denver on "The Structure of Science and Some Deductions and Experiments on Student Teaching and Science Methods Courses."

The present recommendations are a culmination of four years of study and are a revision of a synthesis and summary of the results of a questionnaire study reported at the New York meeting of AETS on April 1, 1966. The preliminary recommendations were presented to the fall, 1966, and spring, 1967, meetings of the Cooperative Committee, to the fall, 1966, meeting of the Central Association of Science and Mathematics Teachers, and to the spring, 1967, annual meeting of the AETS. Copies were circulated to selected individuals by Cooperative Committee members, to the AETS, and to the National Science Supervisors Association members in the spring and summer of 1967 to elicit critical comment. Response to the document was extensive and many thoughtful and detailed comments were received. The present document has been revised to reflect responses received through September 1, 1967.

Although it would be patently impossible to prepare Guidelines which would have the unanimous endorsement of the entire community concerned with

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[2]The committee recommends that the professional education segment should comprise not more than 20% of the total time in the undergraduate program. This is consonant with the 1946 and 1959 reports (cited above) of the Cooperative Committee.

science education, a surprising consensus was indicated among respondents and the subcommittee is unanimous in its recommendation that this document be accepted and endorsed by the Cooperative Committee, by AETS, and by other appropriate groups for use by individuals and institutions engaged in the design and execution of programs of teacher preparation in secondary school science.

The subcommittee takes no position on the particular format of the program designed to accomplish the objectives of science teacher preparation. We believe that the Guidelines are sufficiently general to have applicability to all institutions which are engaged in the preparation of science teachers. We believe also that the competencies outlined are fundamental and will endure through the changing fashions of educational terminology and practices. The report is concerned with the product of a program of preparation, and we think ample opportunity exists for innovative and revolutionary practices for institutions striving to achieve a high level of attainment in the competencies identified.

GUIDELINES FOR THE CONTENT OF PRE-SERVICE PROFESSIONAL EDUCATION FOR SECONDARY SCHOOL SCIENCE TEACHERS

Introduction

Over the years there has been considerable controversy over the appropriate role of professional education for teachers. The debate often has been acrimonious and highly emotional. Discussions often have been conducted more from the platforms of the vested interests of the debating parties rather than through a critical examination of the issues at stake. Recently progress has been made toward finding a more sensible common ground. Professional educators as a group have shifted their views somewhat in regard to the appropriateness of more thorough preparation in content areas to be taught. At the same time members of the academic community have tended to recognize the inappropriateness of single-track academic majors in many content fields and have acknowledged the need for specially designed programs for prospective teachers. A number of the nationally supported curriculum projects have gained prominence and acceptance. The establishment of such programs has made it acutely evident to all concerned with teacher education that more adequate specialized professional training is required. Consequently, there is presently a greater willingness in the academic community to accept appropriate professional preparation in education as an essential if teachers are to be prepared to perform satisfactorily in modern schools with modern curricula. There is increasing recognition that the historic schism so often found between liberal arts and education faculties implies a false dichotomy and that in reality the two aspects of training are complementary phases of a single process.

Long aware of these problems and of their implications for teacher education, the Association for the Education of Teachers of Science and the Cooperative Committee on the Teaching of Science and Mathematics of the American Association for the Advancement of Science have worked jointly to prepare a set of guidelines intended to be of assistance to institutions of higher learning in reviewing their established professional program or in instituting new programs for the training of science teachers.

Common Elements in Diverse Patterns

It is recognized that the patterns of preparation will vary from institution to institution and will be influenced by such factors as personnel, size of institution, and tradition. Nevertheless, there are four general areas in pre-service education programs which should be identifiable:

(1) The school as a social institution. This segment may involve such elements or courses as "social foundations," "school and society," "administration and organization of the school," or "education and culture."

(2) Characteristics of learners and the conditions of learning. This concern is usually represented in the curricula by "general psychology," "the exceptional child," "sociology of adolescence," "educational psychology," "psychology of learning," "adolescent psychology," "child development," "evaluation of performance," or similar courses.

(3) Understanding teaching methodology. This area may be represented by general methods courses, special methods courses, or both. Methods courses may treat such general and varied problems as the

objectives of instruction; classroom and laboratory management; lesson planning; demonstration teaching; the use of instructional resources and materials such as textbooks, references, and the multitude of aids and devices sometimes described as new media; test construction; grading systems; discussion and demonstration techniques; and sponsorship of co-curricular activities.

(4) Practicum type experiences. This area includes such activities as observation, intern experience as teaching aides, and student teaching.

Some of the experiences essential to the preparation of a science teacher are not unique. There is a large segment of professional experiences which may be had in common with all teachers. A considerable proportion of the experiences are unique to science teachers, both collectively and individually. In this last connection, placement of a student teacher should be a highly individualized matter reflecting the student's competencies, his plans for the future, the available supervising teachers in the schools, and other professional and logistical factors.

How professional education preparation is "packaged" will depend inevitably upon the institution and the philosophy of its professional and administrative staff. Below are three possible approaches; other approaches are undoubtedly possible.

1. The Traditional Approach.

Traditional practice has been the "discipline" approach with the requisite elements included under such general titles as educational sociology, educational psychology, history of education, general methods, special methods, student teaching, and tests and measurements.

2. The Functional Approach.

Advocates of this approach to the design of a program refer to the major functions which teachers are called on to perform. A typical function would be regarded as "communication." As a communicator the teacher is regarded as a mediator of the culture and as an agent of society who carries on a continuous dialogue with students in his charge. He functions also as an instructional leader in which he helps to plan, carry out, and evaluate instructional experiences for his charges. As a classroom technician he must: design, adapt, and implement curricula; select, order, and maintain instructional materials and equipment; understand and make use of newer media for conducting instruction; construct tests; and handle the routine chores of reporting and grading with dispatch. As a responsible professional, he reflects in his activities ethical consideration in relationship to students, faculty, and administration. His own responsibilities for continuous professional growth and development, his involvement in professional activities which are both self-fulfilling and of service to the profession, and his broader responsibilities as a citizen in the larger community are implied.

3. The Competency Approach.

This approach to teacher preparation identifies minimum competencies to be acquired before initial employment as a teacher. The science teacher needs competencies which will permit him to understand children and adolescents. He needs an understanding of the patterns of physical and mental development and the wide ranges within which normal behavior may occur. Understanding of the influence on

achievement of such factors as socioeconomic status, membership in minority groups, and peer pressure is required. He needs skills in developing and using a wide range of instructional materials to cope with the equally wide range of interests and abilities represented by the students for whom he is responsible.

Competencies are required which will permit the teacher to achieve the purposes for which society establishes and maintains schools. As a science teacher he has obligations beyond those of most other teachers to understand the tremendous role and social implications of technology and science in the modern world. A successful teacher must take cognizance of the many political, economic, and social forces which have had, and continue to have, influence on the schools. Many of these forces are complex and interrelated, and their influences on the educational process are profound. The program of preparation for the prospective teacher must provide for insight into these forces to enable him to interpret and utilize them in his efforts to prepare students for effective participation in the social order.

He must be a competent person in the teaching act. This includes both the "why" and the "how" of teaching methods. He should recognize the significance of appropriate perceptions of goals sought by him and by his students, the level of maturity and the level of understanding already attained by students, the need for careful and thorough planning in which the learners share, and skill in the techniques of motivating students, making assignments, arranging for learning activities, providing for appropriate practice, and maintaining discipline. In other words, he must be technically proficient in the day-to-day tasks of the teacher.

Finally, he must serve as a professionally competent person, exhibiting characteristics consistent with an ideal of service and manifesting pride and satisfaction in teaching. As a teacher he needs to have come to terms with himself and to have evolved a personally satisfactory philosophy of life and reasonable identification of his life goals. He should practice sound principles of physical and mental health. He is aware of the cutting edge of new information pertinent to his teaching field. He is familiar with sources of information and the activities of appropriate professional societies. He is interested in upgrading professional standards, in improving the economic and social status of teachers, and in promoting teaching as a career.

Perhaps it matters little whether an institution favors "the traditional," "the functional," "the competency," or some other approach to the preparation of science teachers. In any case, there are a great many common elements which must be found in all programs if teachers are to be thoroughly qualified for induction into the profession. The views taken by numerous accrediting organizations have consistently been that many different types of organization may be equally effective, and that the real test of a program is the quality of the educational experiences provided. To this point of view this report fully subscribes.

Program Profile

In the light of the foregoing discussions, two presentations have been developed which identify some essential elements in the pre-professional program of the science teacher. These presentations provide a basis for the specific guidelines which follow.

Presentation I outlines some of the dimensions in the pre-service preparation of science teachers and provides a categorization indicating activities which are appropriate for inclusion in the instruction of all teachers, activities which are appropriate to science teachers as a separate group, and activities which are appropriate for teachers of specific subjects.

In Presentation II an attempt is made to show the relative emphasis on various aspects of the professional education curriculum as the prospective teacher progresses through the pre-service program. It gives graphic representation to the concept that these components of the professional education program are, or should be, continuous, but that the emphasis on each element depends on the individual's location in time in the professional sequence.

The elements in both Presentation I and Presentation II should be regarded as representative rather than as inclusive. Without a doubt, additional items could be suggested and successfully defended for inclusion in either presentation. Conversely, the committee feels that none of the items listed may be omitted in a viable, comprehensive program of science teacher education.

The committee is fully aware that many of the ideas included in the specific guidelines which follow can be treated only in an introductory way and that a depth of understanding can only be acquired by later study and experience. Nevertheless, a beginning teacher needs at least a minimum acquaintance with the many areas represented in the guidelines.

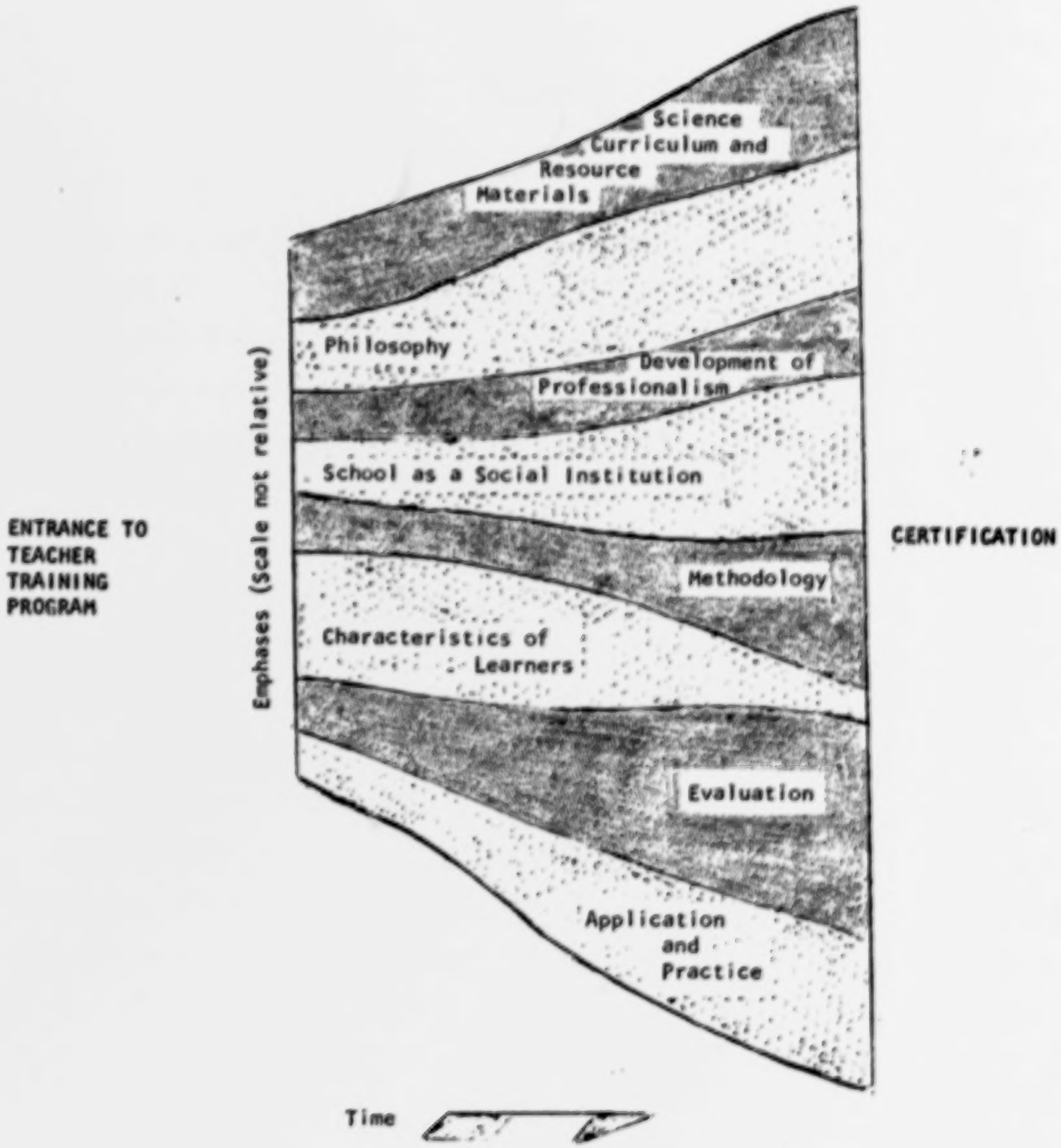
Presentation I

SOME DIMENSIONS IN THE PROFESSIONAL PRE-SERVICE PREPARATION OF SCIENCE TEACHERS

Experiences & Learning Common to All Teachers	Experiences & Learning Common to All Science Teachers	Individualized Learning and Experiences in the Chosen Teaching Field
	Elements to be Included	
1. Understanding the school as a social institution.	1. Understanding science instruction in relation to the total educational program.	1. Developing skills in independent study.
2. Understanding the administration and organization of education.	2. Understanding the unique purposes and contributions of science instruction.	2. Developing special projects.
3. Learning the strategy and tactics of the instructional process.	3. Developing skill in demonstration techniques.	3. Developing skills through practicing experiences. (Observation and student teaching.)
4. Developing understanding and skill in general techniques of instruction.	4. Selecting and organizing science content for instructional purposes.	4. Designing, improving, and trying out of special equipment and materials.
5. Maintaining an appropriate classroom climate.	5. Utilizing laboratory experiences, maintaining and equipping laboratories.	
6. Motivating students.	6. Becoming familiar with the basic literature of science education.	
7. Providing for individual differences.	7. Evaluating science instruction.	
8. Developing sense of professional responsibilities and duties.	8. Developing skills in use of media appropriate to science instruction.	
	9. Learning of the work of significant professional groups.	
	10. Utilizing science incentive programs.	
	11. Understanding the method of inquiry and how to guide students in the interpretation of data.	
	12. Understanding the use of the "model" in science.	

Presentation II

THE PROFESSIONAL EDUCATION SEQUENCE: MAJOR EMPHASES AS A FUNCTION OF TIME



Guidelines

1. The School as an Institution - History and Philosophy

The prospective teacher should possess knowledge of the school as an institution, the varied bases of school control and support, and its role as an agent in continuous interaction with an evolving culture.

Through his studies the prospective teacher should have acquired knowledge of and attained a basis for making objective judgments regarding:

a. the history of American education;

b. basic issues and controversies in education;

c. major criticisms of our educational system and the implications of these criticisms for the continuing evolution of the system;

d. representative philosophies of education and their implications for educational practice;

e. processes of education through which social change is initiated and/or implemented;

f. the school as an educational institution, its relationship to other major institutions and agencies in our culture and in selected other cultures; the school and the urban environment;

g. the role of federal, state, and local government in supporting and controlling education.

2. Human Development

Instruction of prospective teachers should insure a perceptive understanding of the profound variations among pupils resulting from differences in ability, experience, age, cultural and social factors, personality, attitudes, interests, and sex.

During preparation for teaching each individual should have an opportunity to acquire knowledge concerning:

a. the great variety of individual differences operating in the classroom, e.g. intelligence, creativity, social and cultural background, personality and interests, and the implications of such differences for the teaching of pupils;

b. the patterns of thought generally characteristic of students at the different developmental levels and the relationship between these patterns and what they can learn;

c. the characteristics of pupil behavior symptomatic of different levels of mental ability;

d. the wide range in behavior which can be expected of any individual high school pupil;

e. the impact on motivation of the pupil's culture or sub-culture, e.g. social background, parental aspiration, neighborhood, peer group, reading capability, and other similar factors on his motivation;

f. the differences in frustration and tolerance levels among secondary school pupils, with their implications for teaching.

3. Learning

Prospective teachers should recognize that effective learning results in changes in behavior and involves cognitive, affective, and kinesthetic dimensions, including mental and manipulatory skills. Prospective teachers

should be cognizant of the different learning levels, the essential continuities in learning, and the complex interactions and associations which occur if learning is to progress efficiently.

During his undergraduate preparation the prospective science teacher should:

a. study the important theories of learning;

b. realize that learning implies behavioral change;

c. understand that learning can be of different kinds, e.g. cognitive, affective, kinesthetic, and that these require appropriate learning experiences;

d. know that there are differences in the levels of learning, e.g. recognizing, applying, analyzing, synthesizing;

e. recognize the logical and psychological relationship between the concepts being taught and the objectives sought;

f. identify teaching behaviors and programs most likely to elicit attitudinal and value learning in pupils;

g. study carefully the matter of adjusting teaching procedures to the kinds of objectives and developmental levels of the age and grade groups for which they are intended;

h. recognize the differences in the learning of information, simple skills, complex skills, principles, and concepts, and know appropriate techniques for teaching each;

i. distinguish convergent from divergent thought processes and the conditions for eliciting and reinforcing each in the science classroom.

4. Measurement and Evaluation

The prospective teacher should understand the relation which evaluation has to instructional objectives and the profound effect of methods and types of evaluation on the future of the student.

Prospective teachers must understand both formal and informal approaches to student assessment, the characteristics and limitations of measuring devices and techniques, and the potential which evaluation has for teaching and program improvement.

Students preparing to teach science should have both a theoretical foundation and practical experience:

a. involving educational objectives in relation to the principles and practices of evaluation;

b. concerning evaluation techniques for a wide range of teaching purposes (pupil diagnosis, evaluation of teaching, assessing readiness, grading);

c. concerning the construction of tests and test items of different types;

d. leading pupils to understand and accept their own level of ability and achievement;

e. modifying a test in the light of its purpose and results;

f. analyzing the results of testing in a precise and meaningful way;

g. understanding the use of feedback techniques to modify classroom practices;

h. distinguishing among kinds of pupil behavior in light of objectives;

i. evaluating the effects of teaching on groups of differing characteristics;

j. differentiating among tests of general aptitude (intelligence), specific aptitude, proficiency, values, attitudes, and interests;

k. using the cumulative record information about pupils to provide clues to effective modes of instruction (motivation, grouping, etc.);

l. using the criteria (reliability, validity, usability, and objectivity) by which tests are evaluated;

m. interpreting pupil progress constructively to parents;

n. understanding the scope and limitations of standard psychometric instruments.

5. Teaching Tactics

Prospective teachers should learn skills and techniques conducive to the maintenance of a classroom climate which motivates learning and which exploits the natural curiosity and interests of youth.

Prospective teachers of science should understand the basics of class management and have experience:

a. establishing and maintaining effective learning climates;

b. promoting a classroom climate in which incentive to learn rather than fear of failure prevails;

c. developing techniques to motivate students individually and in groups;

d. with science incentive programs for secondary school pupils;

e. recognizing pupil behavior which is symptomatic of underlying emotional disturbances;

f. handling inter-pupil and pupil-teacher behavior situations in a manner consonant with principles of group psychology and individual development;

g. with the basic principles of group interaction;

h. with the distinction between products and processes as basic educational and psychological terms;

i. comparing the effectiveness of large group, small sub-group, and single pupil as basic organizational units for learning;

j. with the psychological and physiological processes underlying the basic skills used to receive, organize, and communicate information, e.g. reading, quantitative thinking, speaking and writing;

k. with counseling students on an individual basis at the grade level being taught;

l. making effective use of the laboratory.

6. Curriculum Development

Prospective teachers should have an adequate perception of the nature of curriculum development with specific recognition of its continuous character and the need for direct involvement and participation of teachers in planning, implementing, and evaluating curricular innovations or adjustments.

Curriculum work for the prospective teacher of science should include:

a. a study of the various points of view and the proper relationship of the different subject areas to each other;

b. background to permit understanding of the nature and direction of changes in curriculum development and how such changes may be implemented;

c. a study of the rationale for a planned curriculum scope and sequence for the science program;

d. a study of the bases and processes of curriculum development;

e. participation in curriculum planning activities;

f. developing an understanding of the implications for curriculum of changes in the administrative organization for instruction, e.g. team teaching, laboratory block, television, programmed instruction, flexible scheduling, and non-graded schools;

g. studying criteria for selection of textbooks and alternatives to the use of a single text.

7. Purposes and Methods of Science Instruction

Prospective teachers should understand the purposes, goals, and unique values to be served by instruction in science and should see such instruction in relation to the total educational program of individual students. Experiences should be provided which will permit them to acquire familiarity with materials and to develop professional skills and judgments which will result in wise selection and effective utilization of the rich and varied resources available for implementing a program of science instruction.

The Prospective Teacher of Science Should:

a. formulate an acceptable statement to which he is committed regarding the purpose for the teaching of science in the secondary school;

b. develop procedures for the teaching of science which encourage autonomous inquiry by pupils;

c. develop ways for specific utilization in the science classroom of both the processes and products of inquiry in his teaching;

d. understand the planning and use of appropriate classroom management techniques, e.g. laboratory planning, demonstration teaching, student activities, daily and extended lesson plans;

e. realize the need for various types of general instructional materials, and specialized materials as they apply to the teaching of science;

f. be able to apply suitable criteria for the selection of general instructional materials; and specialized materials for science instruction;

g. be aware of the technological resources available to teachers, e.g. programmed textbooks, teaching machines, films, film strips, transparencies, laboratory and demonstration equipment, and other audio-visual aids, as well as resourses unique to the teaching of science;

h. be familiar with the source and use of printed materials for reference and supplementary use, particularly as they relate to the teaching of science;

i. be knowledgeable about the range of teaching styles and models as they apply to science today;

j. understand the relative advantages and disadvantages for science teaching of such instructional patterns as: separate subject, correlated, core, unit, and team teaching;

k. know the basis for construction of instructional programs to develop basic skills;

l. have a basis for designing, equipping and managing the science laboratory;

m. be aware of safety practices appropriate to science teaching;

n. be knowledgeable about student characteristics and levels of readiness that tend to indicate the appropriateness of particular teaching styles and/or methods.

8. Commitment to the Profession

The potential science teacher should have experiences which require him to make a commitment to the teaching profession which includes maintenance of scholarly endeavor, intellectual honesty, and moral and contractual integrity. He should know and cultivate the qualities associated with an effective teaching personality. He should understand the role of the teacher in relation to his teaching peers and to administrative supervisory, and consultant personnel, and be able to make effective use of the contributions which these individuals can make to his teaching effectiveness and to his professional growth.

The prospective teacher should have considered in depth:

a. the importance of a satisfactory teaching personality, including warmth, flexibility, liking for youngsters, tolerance, and humility;

b. effective methods for maintaining continuous growth in the profession and in his substantive field;

c. the legal and moral implications of the teaching contract;

d. the nature, program, purpose, and value of professional organizations in education;

e. teacher certification procedures;

f. the ethics and responsibilities of the teaching profession.